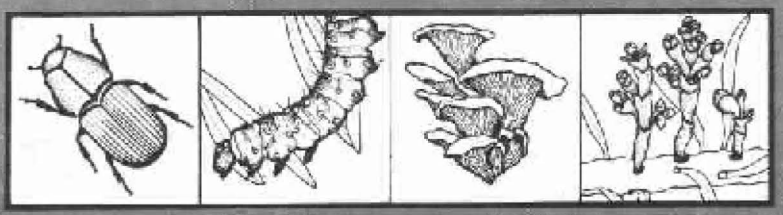
PRONG BINDER

Forest Pest Management



SD144
M9
A3
no.85-24

Report 85-24

3450
October 1985

EVALUATION OF LARCH CASEBEARER PARASITES ON THE FLATHEAD NATIONAL FOREST, MONTANA - 1985

FEB 1986 Documents LIBRARY OREGON STATE UNIVERSITY

by

Scott Tunnock and Wayne Bousfield[1]

ABSTRACT

An evaluation during the summer of 1985 showed that parasites were still exerting control on the larch casebearer on the Flathead NF. Parasitism ranged from 4 to 60 percent and averaged 25.2 percent in the 12 areas surveyed. Four species of parasites were involved. The most abundant was Agathis pumila (Ratzeburg), an exotic wasp that was established within the Flathead NF from 1967 to 1969.

INTRODUCTION

The larch casebearer[2] was first detected on the Flathead National Forest in 1966 when it invaded the southwest quarter of the Forest (Tunnock 1968).

To combat this moth after its entry into the Northern Region in 1957, a program of rearing and releasing exotic parasites was started in 1960 and intensified in 1964 (Denton 1979). The exotic parasite, Agathis pumila (Ratzeburg), was released for the first time on the Flathead NF in 1967 near Ashley Lake. In 1968 it was placed in 34 other locations, and in 1969, 22 more areas were seeded with this parasite (Bousfield et al. 1974). Post-release evaluations showed that A. pumila became established in many of these sites (Bousfield et al. 1974).

---

[1]Entomologists, USDA Forest Service, Cooperative Forestry and Pest Management.

[2]Coleophora laricella (Hubner)

United States Department of Agriculture | Forest Service | Northern Region | P.O. Box 7669 Missoula, Montana 59807

Larch casebearer populations have fluctuated from high to almost undetectable several times since it completely infested the larch stands of the Flathead NF in 1971. Casebearer populations have increased from almost undetectable in 1983 to heavy in 1985 over most of the Forest. Land managers on the Flathead NF became concerned that these fluctuations in the casebearer population might be adversely affecting the parasite complex. They asked Cooperative Forestry and Pest Management to determine if A. pumila was still present in areas infested by larch casebearer, and to find out what other parasites were involved.

METHODS

Most parasites of the larch casebearer emerge from host pupae. To evaluate casebearer parasitism on the Flathead NF, pupae were collected from 12 areas during the weeks of May 28 and June 3. At each area, the number of pupae per 100 larch spurs (buds) was determined. Fifty pupae were collected and placed singly in gelatin capsules. The capsules were then enclosed in a plastic cup with a perforated lid. The parasites were lab reared at room temperature and high humidity. After moth or parasite emergence from the pupae, the content of each capsule was examined. Percent moth emergence and parasitism by each parasite species was calculated.

RESULTS

Parasitism ranged from 4 to 60 percent in the 12 areas (Table 1), and averaged 25.2 percent. Only four species of parasites were present. The most abundant parasite was A. pumila (90 emerged) followed by Chrysocharis laricinellae (Ratzeburg) (43 emerged). Agathis pumila was present in 11 of the 12 areas, and C. laricinellae was present in eight of the 12 areas.

DISCUSSION

The parasites, A. pumila and C. laricinellae, are exotic wasps imported from Europe that were previously released in the eastern United States. We introduced A. pumila into the Flathead NF but we don't know how C. laricinella got there. The other two parasites in table 1 are native to the U.S. and have other known hosts. Sometimes Spilochalcis populations build up and cause over 75 percent mortality of a casebearer population.

It is of interest that no A. pumila were present in casebearers collected from the Swan River Highway Department area. This was a successful release plot and populations of A. pumila became very abundant there. They were collected from this area a few times and shipped to Oregon for introduction. Our sample might have been too small, or the wrong larch trees were chosen. A. pumila could still be present in larch stands surrounding this plot.

This survey did confirm that A. pumila is still widespread over the Flathead NF and caused 40 percent casebearer mortality in one area. The widespread distribution of C. laricinellae is also encouraging.

Populations of larch casebearer will continue to fluctuate on the Flathead NF, and it is unlikely that any tree mortality will occur. Some slight growth loss might occur during periods when defoliation is heavy for several years in an area.

Table 1.--Larch casebearer populations and parasitism at 12 locations on the Flathead National Forest during 1985.

	Average pupae/ 100 spurs	Emerged moths	Unknown cause of death	Agathis	Chrysocharis	Mesopolobus	Spilochalcis	Unknown parasites	Total percent parasitism
Swan R. (Hwy.Dept).									
Number	17	45	3		14			1	
Percent		90	6		2			2	4
Smith Lake									
Number	30	39	4	3		4			
Percent		78	8	6		8			14
Bad Rock Canyon									
Number	11	24	8	8	10				
Percent		48	16	16	20				36
Lion Lake									
Number	14	43	3	4					
Percent		86	6	8					8
Stillwater Forest									
Number	16	33	8	2	2		5		
Percent		66	16	4	4		10		18
Big Fork									
Number	15	38	6	5	1				
Percent		76	12	10	2				12
Condon (Lion Cr.)									
Number	10	41	2	4	2		1		
Percent		82	4	8	4		2		14
Riverside Camp (Hungry Horse Res.)									
Number	23	15	5	16	11			3	
Percent		30	10	32	22			6	60
Canyon Creek (Hungry Horse Res.)									
Number	26	24	3	11	11		1		
Percent		48	6	22	22		2		46
Bitterroot Lake									
Number	12	26	3	20				1	
Percent		52	6	40				2	42
Lake Mary Ronan									
Number	6	27	3	14	5			1	
Percent		54	6	28	10			2	40
S. of Lakeside									
Number	16	42	4	3				1	
Percent		84	8	6				2	8

REFERENCES

Bousfield, W.; S. Tunnock; L. Pettinger, and D. Ross. 1974. Establishment and distribution of the larch casebearer parasite, Agathis pumila, in Idaho, Montana, Washington, Oregon, and British Columbia. USDA Forest Serv., Northern Region, Div. of State and Private Forestry, Missoula, MT. Rept. 74-3, 40 p., illus.

Denton, R. E. 1979. Larch casebearer in western larch forests. USDA Forest Serv., Intermtn. For. and Range Expt. Sta., Ogden, UT. Gen. Tech. Rept. INT-55, 62 p., illus.

Tunnock, S. 1968. The larch casebearer in the Northern Region during 1967. USDA Forest Serv., Div. of State and Private Forestry, Missoula, MT., 5 p., illus.